AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	41

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0006	03 MAY 6	N/A	SPEC. NO. 1143

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
DEPARTMENT OF THE ARMY CORPS OF ENGINEERS SACRAMENTO 1325 J STREET SACRAMENTO, CALIFORNIA		SEE ITEM 7	

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE | FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACW05-03-B-0004

9B. DATED *(SEE ITEM 11)*
2 APR 2003

10A. MODIFICATION OF CONTRACTS/ORDER NO.
N/A

10B. DATED *(SEE ITEM 13)*
N/A

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

NAPA RIVER/NAPA CREEK FLOOD PROTECTION
NAPA, CALIFORNIA

1 ENCL 1) SECTIONS 02301 AND 02920L.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY *(Signature of Contracting Officer)*	16C. DATE SIGNED

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DIVISION 02 - SITE WORK

SECTION 02301

EXCAVATION

12/97

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SECTION 02301

EXCAVATION
12/97

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	(1995) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregate Washing
ASTM C 136	(1996a) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D 698	(1991) Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3))
ASTM D 2487	(1998) Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4318	(1998) Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ENGINEERING MANUALS (EM)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

CESPK PAM 415-1-2	Construction Control Manual

1.2 SCOPE

The work covered by this section consists of furnishing all plant, labor, and materials, and incidentals, and performing all operations necessary for stripping of the areas specified herein or indicated on the drawings, and excavation of areas specified herein. Excavation shall include excavation

of riverbanks and floodplain terrace drainage swales and obtaining satisfactory fill material from required project excavation. All work under this section shall comply with the requirements of EM 385-1-1.

1.3 MEASUREMENT

1.3.1 Stripping

Stripping, except for the secondary borrow site (optional item), shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of the ground surface after clearing and grubbing, and a second survey of the same area after completion of stripping to the specified depths. Surveyed cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed one hundred (100) feet. If the Excavation of Secondary Borrow Site optional item is exercised by the Government, stripping of the secondary borrow site shall be considered incidental to excavation and no separate measurement for payment shall be made.

1.3.2 Floodplain Terrace Excavation

The approximate limits in plan view for the floodplain terrace excavation are shown on the contract drawings. The pre-construction survey as described in paragraph "Pre-Construction Survey" shall be performed to established the horizontal limits for excavation. Excavation for the floodplain terrace shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing, and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade or horizontal extent of excavation except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades and elevations shown on the contract drawing will not be included in measurement for payment.

1.3.3 Marshplain Terrace Excavation

Excavation for the marshplain terrace shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades, and elevations shown on the contract drawings will not be included in measurement for payment.

1.3.4 ***Marshplain Terrace Excavation Hauled to Gasser Disposal Site***

Excavation for the marshplain terrace hauled to the Gasser Disposal Site

shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades, and elevations shown on the contract drawings will not be included in measurement for payment.

1.3.5 Floodplain Terrace Drainage Swale Excavation

Excavation for the floodplain terrace drainage swales shall each be measured for payment, separately, by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after floodplain terrace excavation and a second survey of the same area after the completion of the drainage swale excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades and elevations shown on the contract drawings will not be included in the measurement for payment.

1.3.6 Optional Item: Excavation from Secondary Borrow Site

Excavation from the secondary borrow site shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades, and elevations shown on the contract drawings will not be included in measurement for payment.

1.4 PAYMENT

1.4.1 Stripping of Topsoil

Payment for stripping, measured as specified, will be made at the contract unit price per cubic yard for Item, "Stripping of Topsoil". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, and all operations necessary to complete the work specified. If the Excavation of Secondary Borrow Site optional item is exercised by the Government, stripping of the secondary borrow site shall be considered incidental to excavation and no separate payment shall be made.

1.4.2 Floodplain Terrace Excavation

Payment for the floodplain terrace excavation, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Floodplain Terrace". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. There will be no separate payment for dewatering or care and diversion of water. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation. All costs of sorting and removing debris from the excavated riverbank levees shall be considered incidental to the related excavation.

1.4.3 Marshplain Terrace Excavation

Payment for the marshplain terrace excavation, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Marshplain Terrace". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation. All costs of sorting and removing debris from the excavated riverbank levees shall be considered incidental to the related excavation.

1.4.4 Marshplain Terrace Excavation Hauled to Gasser Disposal Site

Payment for the marshplain terrace excavation disposed at the Gasser Disposal Site, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Marshplain Terrace, hauled to Gasser Disposal Site". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation. All costs of sorting and removing debris from the excavated riverbank levees shall be considered incidental to the related excavation.

1.4.5 Floodplain Terrace Drainage Swale Excavation

Payment for the floodplain terrace drainage swales excavation, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Floodplain Terrace Drainage Swales (1 through 5)". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation.

1.4.6 Tidal Breach Excavation

Payment for the tidal breach will be made at the contract lump-sum price for Item, "Excavation of Tidal Breach". Payment shall constitute full

compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation.

1.4.7 Optional Item: Excavation from Secondary Borrow Site

Payment for excavation from secondary borrow site, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation from Secondary Borrow Site". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of stripping topsoil and sorting and removing debris from the excavated soils shall be considered incidental to the related excavation.

1.5 DEFINITIONS

1.5.1 Stripping

Stripping shall consist of the removal and satisfactory disposal of crops, weeds, grass, and other vegetative materials and topsoil to depths specified herein.

1.5.2 Topsoil

At locations specified for topsoil replacement, topsoil shall consist of material obtained from required stripping.

1.5.3 Satisfactory Materials

Satisfactory materials shall be as defined in SECTION 02310, FILLS AND EMBANKMENT.

1.5.4 Unsatisfactory Materials

Unsatisfactory materials shall be as defined in SECTION 02310, FILLS AND EMBANKMENT.

1.5.5 Soil Classification

Materials shall be classified in accordance with ASTM D 2487. Preparation and testing for classification purposes shall be by the wet method. Gradation tests shall be performed with ASTM C 117 and ASTM C 136. Atterberg limits shall be performed in accordance with ASTM D 4318.

1.5.6 Unstable Material

Unstable material is that material that cannot be properly compacted or will not support construction equipment or fill material, due to excess moisture. Potentially unstable materials are fine grained soils with in-place moisture contents near or above the plastic limit as determined by

ASTM D 4318, Method A, or 3 or more percent greater than the optimum moisture content as determined by ASTM D 698.

1.5.7 Excavation in the Wet

Excavation in the wet refers to all excavation efforts which yield material which is wet due to tidal intrusion, channelized flow of any type, or ponded or standing water which occurred due to an overbank event. Additionally, excavation in the wet refers to any excavation effort which may cause any measurable increase in the turbidity of a stream, river, channel, or other body of water, regardless of the volume of flow during the work period.

1.5.8 Excavation in the Dry

Excavation in the dry refers to all excavation not meeting the definition for excavation in the wet.

1.6 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330, SUBMITTAL PROCEDURES:

SD-01 Data

Survey Data; .

Submit copies of survey data used for developing quantities for payment purposes, and compliance surveys. The survey data shall include cross sections before excavation and a second survey of the area after completion of the excavation. The submitted survey data shall include certification that the data is accurate and surveying was performed by a licensed surveyor in the state of California.

Pre-Construction Survey; G.

Submit copies of survey data used for developing the pre-construction survey and developing limits for excavation. The survey data shall include cross sections. The submitted survey data shall include certification that the data is accurate and surveying was performed by a licensed surveyor in the state of California.

Equipment; .

Data for equipment to be used for excavation, hauling, and stockpiling and/or disposal shall be submitted and include weight, size, axle loads, and contact pressures.

SD-08 Statements

Plan of Operation; G.

The Contractor shall submit for approval a Plan of Operation for accomplishing all stripping and excavation.

Material Distribution and Stockpiling Plan; G.

Earth material distribution and stockpile plan that describes where material will be obtained, processed, placed and/or stockpiled for usage. The stockpile plan shall include locations, stockpile heights, slopes, limits, and drainage around the stockpile areas. This information shall be provided within thirty (30) days after the notice to proceed.

Earthwork; .

Procedure and location for disposal of the unused satisfactory material within the disposal site.

SD-09 Reports

Testing; G.

Within 24 hours of conclusion of physical tests, 2 copies of test results, including calibration curves and results of calibration tests.

SD-13 Certificates

Testing Facilities; G.

Qualifications of the commercial testing laboratory or Contractor's testing facilities.

SD-18 Records

Earthwork Notification; G.

Advance notice on the opening of excavation. Survey Records.

1.7 SUBSURFACE DATA

Subsurface soil exploration logs are shown on the contract drawings. Available subsurface data and subsurface conditions for this site are described in SECTION 02020, SUBSURFACE DATA.

1.8 CLASSIFICATION OF EXCAVATION

No consideration will be given to the excavation methods and nature of the materials encountered, and all excavation will be designated as unclassified.

1.9 BLASTING

Blasting will not be permitted.

1.10 PLAN OF OPERATION

The Contractor shall submit for approval a Plan of Operation for accomplishing all stripping and excavation. The plan shall include but not be limited to the Contractor's proposed sequence of construction for stripping and excavation operations, and methods and type of equipment to be utilized for all excavation operations, including transporting, stockpiling, disposal, and any site dewatering. The plan shall also include areas identified as excavation in the wet, the Contractor's proposed road pattern, and plan for implementing dust control measures.

1.10.1 Equipment

Data for equipment to be used for excavation, hauling, stockpiling and/or disposal shall be submitted and include equipment weight, size, axle loads and contact pressure shall be submitted. The maximum equipment contact pressure ***for equipment working on the foundation of the training dike*** shall be 8 psi below elevation 4 feet and 15 psi above elevation 4 feet.

1.11 GENERAL CONDITIONS

Factors such as site conditions, tidal stages, regulatory permit restrictions, and use of excavated material for fill, can influence whether excavation in the dry or in the wet can be utilized. Time restrictions for excavating in the wet are found in SECTION 01505, GENERAL REQUIREMENTS. Excavation in the wet is subject to regulatory and permitting requirements for which the Contractor shall be responsible. Excavation in the wet shall not start until all regulatory requirements have been met and written approval by the Contracting Officer has been provided. Groundwater will be encountered or affect ground conditions as described in SECTION 02020, SUBSURFACE DATA.

1.12 EXCAVATION FROM RIVER SIDE

Excavation from the river side will not be permitted including dredging or excavation from barges.

1.13 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of in the disposal site***s*** shown on the contract drawings and in accordance with paragraph "DISPOSAL SITE MATERIAL PLACEMENT". If the optional item "Excavation of Secondary Borrow Site" is exercised by the Government, then the secondary borrow site may be used as a secondary disposal site by the Contractor. No debris or rubble from the project excavations shall be placed in the secondary borrow/disposal site. Unsatisfactory material being wasted in the disposal site***s*** shall be free of petroleum products, trash, and contaminated soil. This material shall become the property of the Contractor and disposed of off-site in accordance with all Federal, State, and local regulations and codes, except as otherwise directed. The Contractor shall not abide by such directives unless they are in writing. Rock riprap, concrete rubble, and wood debris from the required project excavations may be crushed to pieces no larger than 3 inches in any dimension and placed in the disposal site***in Kennedy Park (plan sheet C-48)*** to a maximum elevation of 8 feet. A minimum of 4 feet of soil cover shall be placed over the crushed rubble in the ***Kennedy Park*** disposal site.

Alternatively, this material shall become the property of the Contractor and disposed of off-site in accordance with all Federal, State,and local regulations, except as otherwise directed in writing.Satisfactory material removed from excavations shall be used, insofar as practicable, in the construction of fills and embankments. The sequencing and utilization of excavated material for fill material shall be in accordance with SECTION 02310, subparagraphs "Training Dike Fill". No satisfactory excavated material shall be wasted without specific written authorization. Stripped topsoil shall be used to construct the planting berm and to cover the ***Kennedy Park*** disposal site. ***All marshplain terrace excavation below the elevation of 3' NGVD shall be disposed of at the Gasser Disposal Site (plan sheet C-49 and C-50)*** Any excess satisfactory material to be wasted shall be disposed of in the disposal site***s*** shown on the contract drawing***s, as approved by the Contracting Officer***.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

Clearing and grubbing as described in SECTION 02330, CLEARING AND GRUBBING, shall be performed prior to stripping, excavation, or stockpiling.

3.2 PRE-CONSTRUCTION SURVEY

After clearing and grubbing as described in SECTION 02330, CLEARING AND GRUBBING, a pre-construction survey shall be taken for the area to be excavated for the floodplain terrace area to establish the limits for excavation and/or stripping. The survey of the ground surface shall be performed at significant grade breaks or changes in horizontal extent of excavation, except that the maximum distance between cross sections shall not exceed fifty (50) feet. The objective of this survey is to establish accurate field representation of the limits for excavation and for use as part of the as-built drawings.

3.3 STRIPPING

Prior to stripping, the area shall be cleared and grubbed in accordance with SECTION 02330, CLEARING AND GRUBBING. Stripped material shall be stockpiled at locations convenient to areas that are to receive topsoil replacement as indicated in SECTION 02310, FILLS AND EMBANKMENTS. Topsoil shall be kept separate from other excavated materials, debris, litter, and other materials that would interfere with seeding for re-vegetation.

3.3.1 Training Dike and Ramps

The foundation for the training dike and ramps shall be stripped to a depth of six (6) inches below existing ground. Care shall be exercised to ensure that the depth of stripping does not exceed that specified.

3.3.2 Floodplain Terrace

Prior to stripping, the pre-construction survey shall be approved by the Contracting Officer. The floodplain terrace excavation limits based on the pre-construction survey shall be stripped to a depth of eight (8) inches below existing ground and shall include the side slopes and crown of existing embankment. The extent of stripping shall be limited to where excavation cuts are eight (8) inches or greater in depth.

3.3.3 Optional Item: Secondary Borrow Site

Prior to stripping, the pre-construction survey shall be approved by the Contracting Officer. The secondary borrow site excavation limits based on the pre-construction survey shall be stripped to a depth of six (6) inches below existing ground.

3.4 EXCAVATION

3.4.1 General

Excavation shall not start until the Plan of Operation and pre-construction survey limits have been approved by the Contracting Officer. The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the contract drawings and the tolerances specified in paragraph FINISHING. Selective excavation for satisfactory material will be required. Excavated satisfactory materials shall be transported to the location where fill or embankment is to be placed. When the sequence or rate of excavation and/or need for moisture conditioning do not allow direct transportation and placement, the satisfactory materials shall be stockpiled. Unsatisfactory material shall be transported to the designated disposal site. Excavation in the wet shall not start until all regulatory and permitting and specification requirements have been met and written approval by the Contracting Officer has been received.

3.4.2 Floodplain Terrace Excavation

No excavation shall start until approval of the pre-construction survey limits by the Contracting Officer. No excavation shall be paid for prior to the approval of the pre-construction survey limits. Excavation shall start after stripping has been performed. Excavated satisfactory material shall be used in accordance with SECTION 02310, FILLS AND EMBANKMENTsubparagraph "Training Dike Fill". As noted on the logs of explorations, there is buried debris, consisting primarily of wood, asphalt, concrete, and clothing with some trash, in the existing levees along the bank of the Napa River between the Kennedy Park boat ramp and Old Tulocay Creek. According to the exploration logs, from Kennedy Park to Pelusi Road the debris is primarily buried on the water side of the levee section. According to the exploration logs, from Pelusi Road to Old Tulocay Creek the debris is buried throughout the levee section. The amount of buried debris varies along the levee alignment but is estimated to be no more than 40 percent by volume. The Contractor shall remove the buried debris from the excavated soils prior to use of the soils in the

training dike or planting berm embankments or wasting in the ***designated*** disposal site. No pieces of debris larger than 3 inches shall be placed in any embankment or in the disposal site. The maximum amount of debris under 3 inches which may be placed in any embankment is 5 percent by volume. The removed debris shall become the property of the Contractor and shall be disposed of in accordance with subparagraph "Utilization of Excavated Materials" in this section.

3.4.3 Marshplain Terrace Excavation

~~Excavation for this project feature shall not start until completion of the floodplain terrace excavation.~~ As noted on the logs of explorations, there is buried debris, consisting primarily of wood, asphalt, concrete, and clothing with some trash, in the existing levees along the bank of the Napa River between the Kennedy Park boat ramp and Old Tulocay Creek. According to the exploration logs, from Kennedy Park to Pelusi Road the debris is primarily buried on the water side of the levee section. According to the exploration logs, from Pelusi Road to Old Tulocay Creek the debris is buried throughout the levee section. The amount of buried debris varies along the levee alignment but is estimated to be no more than 40 percent by volume. The Contractor shall remove the buried debris from the excavated soils prior to use of the soils in the training dike or planting berm embankments or wasting in the disposal site. No pieces of debris larger than 3 inches shall be placed in any embankment or in the ***designated*** disposal site. The maximum amount of debris under 3 inches which may be placed in any embankment is 5 percent by volume. The removed debris shall become the property of the Contractor and shall be disposed of in accordance with subparagraph "Utilization of Excavated Materials" in this section.

3.4.4 Floodplain Terrace Drainage Swale Excavation

Excavation for the floodplain terrace drainage swales shall not start until completed surveys of the existing ground surface have been submitted and written approval has been received from the Contracting Officer to start work. No payment for excavation will be made until written approval to start work has been received from the Contracting Officer.

3.4.5 Tidal Breach

Excavation for the tidal breach shall not start until completion and acceptance by the Contracting Officer of all other work in this contract. Excavation for the tidal breach shall not start until a completed survey of the finished terrace excavations have been submitted and written approval has been received from the Contracting Officer to start work. No payment for material excavated will be made until written approval to start work has been received from the Contracting Officer and any material excavated before receiving written approval will be immediately replaced at the Contractor's own expense.

3.4.6 Optional Item: Excavation of Secondary Borrow Site

The primary source of material for construction of the training dike is the

floodplain and marshplain terrace excavations above elevation 4 feet or above the groundwater level, whichever is lower in elevation. A secondary borrow site is identified on the contract drawings. The secondary borrow site shall only be utilized if insufficient suitable embankment soils are obtained from the floodplain and marshplain terrace excavations. No excavation of the secondary borrow site shall take place without written authorization from the Contracting Officer. No excavation shall be paid for prior to the approval of the pre-construction survey limits. Excavation shall start after stripping has been performed. Excavated satisfactory material shall be used in accordance with SECTION 02310, FILLS AND EMBANKMENT, subparagraph "Training Dike Fill". As noted on the logs of explorations, there is buried debris, consisting primarily of wood, asphalt, concrete, and clothing with some trash, in the secondary borrow site. The amount of buried debris varies throughout the site but is estimated to be no more than 10 percent by volume. The Contractor shall remove the buried debris from the excavated soils prior to use of the soils in the training dike or wasting in the disposal site. No pieces of debris larger than 3 inches shall be placed in any embankment or in the disposal site. The maximum amount of debris smaller than 3 inches which may be placed in any embankment is 5 percent by volume. The removed debris shall become the property of the Contractor and shall be disposed of in accordance with subparagraph "Utilization of Excavated Materials" in this section.

3.5 MATERIAL DISTRIBUTION AND STOCKPILING PLAN

Earth material distribution and stockpile plan describing where material will be obtained, processed, placed and/or stockpiled shall be submitted for approval to the Contracting Officer. Stockpiles used for stripping material, satisfactory fill material and material to be disposed of offsite shall be separated. Stockpiles shall be located as to not adversely surcharge or make unstable any adjacent slopes. The maximum allowable height of stockpile material without causing instability of the ground or excavation shall be determined by the Contractor. Upon completion of construction operations, all remaining stockpiles shall be removed and disposed of.

3.6 DISPOSAL SITE MATERIAL PLACEMENT

Material designated for disposal, as described in paragraph "UTILIZATION OF EXCAVATED MATERIALS" shall be placed at the disposal site***s*** shown on the contract drawings. Material shall be placed in horizontal layers distributed uniformly over the disposal site. Material that is saturated or has free water shall be aerated to achieve water contents near the plastic limit of the material, as determined by ASTM D 4318, to assure traffic ability and compaction before subsequent layer placement. Aeration may be performed within or outside the disposal site.

3.6.1 Kennedy Park Disposal Site Material Placement

Material layer shall be compacted by track walking equipment having an operating weight of at least 80,000 pounds with a minimum of three complete passes. Routing construction equipment over the material can be used for

compaction if it can be demonstrated to the Contracting Officer that the degree of compaction is equal to or greater than track walking. The final grade shall be in accordance with paragraph "FINISHING".

3.6.2 Gasser Disposal Site Material Placement

Area to receive fill shall be cleared and grubbed as per section 02230 CLEARING AND GRUBBING, including the top 2 inches of topsoil. Topsoil shall be stockpiled and spread on site prior to final seeding. The upper 12 inches of native ground shall be scarified and moisture-conditioned as needed and compacted to 90% as determined by ASTM D1557-91. Once preparation of subgrade has been approved by Contracting Officer, fill shall be placed at 8 to 12 inch uncompacted thickness and compacted to a minimum relative compaction of 92%. The fill material should not contain rocks or lumps over 6 inches in greatest dimension and not more than 15% larger than 2.5 inches. Contractor QC testing shall be performed in accordance with Construction Control Manual requirements for backfill and embankment. A third party other than the government will be onsite performing QA testing, Contractor shall accommodate this party.

3.7 DRAINAGE

Surface water control shall be accomplished in coordination with the required excavation. Surface water control may necessitate the use of temporary diversion ditches, dikes and grading. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting the site shall be continually and effectively drained. Methods for care of surface water and for controlling the surface water or groundwater levels shall be subject to approval of the Contracting Officer.

3.8 FINISHING

3.8.1 General

The surface of excavations and the disposal site shall be constructed to the lines, grades, and/or elevations shown on the contract drawings and verified by compliance surveys performed by the Contractor. The finished surface shall be a smooth surface free from gullies, humps, bulges or depressions in the surface.

3.8.2 Excavations

Excavations shall have a construction tolerance of three (3) inches above or below the prescribed lines, grades or elevations.

3.8.3 Disposal Site

The material at the disposal site side slopes and top shall have a constructed tolerance of three (3) inches above or below the prescribed grade or elevations provided that surface drains in the direction indicated on the drawings.

3.9 SLIDES

In case sliding occurs in any part of the excavations prescribed in this section after they have been excavated, but prior to final acceptance of all work under the contract, the Contractor shall repair the slide as directed by the Contracting Officer. In case the slide is caused through the fault of the Contractor, it shall be repaired at no cost to the Government. In case the slide is due to no fault of the Contractor, an equitable adjustment in the contract price will be made for the repairs in accordance with the Contract Clause CHANGES.

-- End of Section --

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GRASS SEEDING

02/02

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SECTION 02920L

GRASS SEEDING
02/02

PART 1 GENERAL

1.1 DESCRIPTION

The goal of this work is to establish vigorous stands of California native grass that provide erosion control and wildlife habitat, and to utilize exotic erosion control grasses for soil stabilization. This section provides grass seeding to help meet permitted requirements of the Regional Water Quality Control Board and shall be coordinated with Section 01356 STORM WATER POLLUTION PREVENTION MEASURES. The work shall consist of seeding grasses to all disturbed soil areas of the project and/or as designated on the plans. The Contractor shall provide all necessary labor, material, equipment, and services for grass seeding and mulching for all designated areas.

1.2 DEFINITIONS

The terms referenced herein are defined as follows:

1.2.1 CO:

Contracting Officer

1.2.2 COR:

Contracting Officer's Representative

1.2.3 Contractor:

The company that is awarded this contract and its sub-contractors.

1.2.4 Seeding:

The act of installing or placing seed, and harrowing it into the soil.

1.2.5 Grass:

When used herein, this term shall refer to all grasses specified herein, including either California native and/or non-native grasses, also referred to as exotic grasses.

1.2.6 Native Grass:

Grasses endemic to California.

1.2.7 Exotic Grass:

Non-native grasses to California.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AGRICULTURAL MARKETING SERVICE (AMS)

AMS-01 (Amended thru: Aug 1988) Federal Seed Act Regulations (Part 201-202)

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-1909 (Basic) Fertilizer
FEDERAL

SPECIFICATIONS (FS)

FS O-F-241 (Rev D) Fertilizers, Mixed, Commercial

1.4 QUALIFICATIONS

All work shall be done by an experienced Contractor familiar with California native grasses and its horticulture, and industry methods and standards for grass seeding. The Contractor shall employ modern equipment and state of the art methods and techniques. The Contractor shall have a minimum of 2 years of applicable on the job experience with native grass seeding and weed control.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualifications; G

Documentation(resume or other)that the contractor performing seeding operations is experienced and familiar with California native grasses and its horticulture, and industry methods and standards for native grass seeding. Documentation showing a minimum of 2 years of applicable on the job experience with native grass seeding and weed control.

SD-03 Product Data

Equipment List;

Provide a list of equipment to be used for the seeding and mulching operations, including descriptive data and calibration tests. State equipment brand, model and supplier.

Fertilizer;Mulch;Tackifier;Fiber;

Provide data for fertilizer, mulch, tackifier and fiber to be used.

SD-05 Design Data

As-built Drawings; G

As-built drawings, which provide current factual information showing installed seeding locations and identifying seed mix species and seeding rates.

Monthly Establishment Records; G

Written monthly maintenance records identifying work performed and site conditions.

SD-06 Test Reports

Soil Test;

A soil analysis, analyzing specific soil properties, shall be submitted to the Contracting Officer. For results that prove contrary to project requirements, recommendations shall be made based on the results of the analysis and which support using alternative approaches to fertilizer selection or soil amendments to improve soil properties for plant growth.

Final Establishment Report; G

Written report of records of maintenance work performed on native grasses, photos, and site observations. Reports shall include monthly establishment record,as-built plans and color photos.

SD-07 Certificates

Seed; G

Provide certificates of all seed used on the project. Show where seed was purchased from, date purchased, seed species, and purity and germination percentages.

Pesticide;

The material supplier's or equipment manufacturer's statement, that the supplied material or equipment meets specified requirements. Each certificate shall be signed by an official authorized to certify in behalf of material supplier or product

manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply. Certificates of compliance certifying that herbicide materials meet the requirements specified, before the delivery of materials. Pesticide material shall include EPA registration number and registered uses. Certificates shall be submitted to the Contracting Officer before work is started for work for which it pertains.

1.6 INSPECTIONS

It is the Contractor's responsibility to notify the Contracting Officer at least 5 days prior to each anticipated inspection. The Contracting Officer may at anytime inspect work without notification. The following are key inspection events:

1.6.1 Inspection of Seed, Equipment & Quantities

Seed suppliers are subject to inspection of methods, materials, and processing. Contractor shall provide supplier names and addresses upon award of contract. Seed shall be inspected upon arrival at the job site by the Contracting Officer for conformity to species and quality in accordance with paragraph MATERIALS.

1.6.1.1 Upon Arrival at the Site

The Contractor shall provide the Contracting Officer with receipts of the seed purchased and delivered to the site. Receipts shall provide name of company from which the seed was purchased, seed species, composition, quantity, germination rate, and pure-live-seed percentage. Other material shall be inspected for meeting specified requirements. Unacceptable materials shall be removed from the job site and replaced by the Contractor.

1.6.1.2 Calibration Test

Immediately prior to commencement of seeding operations, the Contractor shall adjust and calibrate equipment as per manufacturer's specifications and field test in the presence of the Contracting Officer.

1.6.2 Inspection of Seeding Operation

Seeding operation shall be inspected during equipment calibration, material loading and seed application.

1.6.3 Seeding Acceptance

A final inspection shall be held by the Contracting Officer to determine any deficiencies in work after completion of seeding operations. Upon receipt and approval of the punch list items, a letter of acceptance will be issued by the Contracting Officer.

1.6.3.1 Preliminary Seeding Inspection

Prior to the completion of the Seeding Period, a preliminary seeding

inspection shall be held by the Contracting Officer. Time for the inspection shall be requested in writing by the Contractor at least 5 working days prior to desired date. The quantity and type of species seeded, clean up requirements and the acceptability of the seeding operation, in accordance with the requirements stated herein, shall be determined and noted in writing.

1.6.3.2 Final Seeding Inspection

A final inspection shall be requested in writing by the Contractor at least 5 working days prior to the desired date. At the final seeding inspection, the Contracting Officer will evaluate the deficiencies noted in the preliminary seeding inspection, to ensure they have been corrected. Time for the inspection shall be established in writing. A "Seeding Acceptance" will be given after all seeding requirements have been satisfactorily completed and approved by the Contracting Officer. PARTIAL ACCEPTANCE OF ANY ITEM OR COMBINATION OF ITEMS WILL NOT BE GIVEN. A written acceptance by the Contracting Officer of all project components, in addition to requirements specified in this section, shall constitute the beginning of the Establishment Period.

1.6.3.3 Final Establishment Inspection

Prior to the completion of the Establishment Period, a Final inspection shall be held by the Contracting Officer. The Contractor shall request time for the inspection in writing at least 5 working days prior to the desired date. All deficiencies shall be noted at that time and corrected within 10 working days. The acceptability of the grass in accordance with the Establishment Period shall be determined. Once acceptibility of the establishment period has been determined a written acceptance by the Contracting Officer shall be issued.

1.7 SHIPMENT, DELIVERY, STORAGE AND HANDLING

1.7.1 Shipment

Preparation for shipment shall be done in a manner that will not cause damage to seeds, fertilizers, pesticides and all other material.

1.7.2 Deliver

Seeds, fertilizers, pesticides and all other material shall be protected from weather and contamination during delivery.

1.7.3 Storage

Material shall be stored in areas approved by the Contracting Officer. Seed and fertilizer shall be stored in cool, dry locations out of direct sunlight and away from contaminants. Chemical and pesticide material shall not be stored with other landscape materials and shall be stored in a spillage contained area. Mulch shall be kept covered from rain.

1.7.4 Handling

Except for bulk deliveries, material shall not be dropped or dumped from vehicles.

1.8 TIMES AND CONDITIONS

1.8.1 Seeding Times

All grasses shall be seeded at the earliest available time and be completed by 15 October ***2003***. No variance to the start date will be allowed unless given in writing by the Contracting Officer.

1.8.2 Seeding Period

The Seeding Period begins, when the Notice to Proceed is given and continues until all requirements indicated in this specification are completed and approved and a written acceptance is given by the Contracting Officer.

1.8.3 Seeding Conditions

Seeding and construction operations shall be performed only during periods when beneficial results can be obtained. When excessive moisture, winds or other unsatisfactory conditions prevail, the work shall be stopped when directed by the Contracting Officer. The Contractor shall schedule planting in the mornings to avoid stressing plants during seeding, if the planting schedule calls for installation when the temperature is expected to be 90 degrees Fahrenheit/32 degrees Centigrade or greater. When special conditions warrant a variance to the planting operations, a proposed seeding time shall be submitted in writing to, and approved by, the Contracting Officer. The Contractor shall be prepared to seed at the earliest time when all conditions (weather, moisture, temperature, tides and river flows, etc…) are acceptable.

1.8.4 Establishment Period

The "Establishment Period" begins, when all items indicated for seeding installation have been satisfactorily completed and the Contracting Officer has given an "Installation Acceptance" in writing.

1.8.4.1 Native Grasses

The establishment period for Native grasses shall terminate on 1 April ***2004*** and upon written acceptance of the "Native grass establishment Period" by the Contracting Officer

1.8.4.2 Exotic Grass

The establishment Period Shall for Exotic Grasses shall be for 60 continuous days.

1.9 MEASUREMENT AND PAYMENT

Measurement and payment for each requirement stated herein shall be as indicated below:

1.9.1 Native Grass Seeding

Native grass seeding shall be measured by the number of acres seeded in accordance with plans and specifications and as directed by the Contracting Officer. Payment for " Native Grass Seeding" shall be made at their respective unit price per acre, and shall be in full compensation for all labor, materials, and costs associated with native grass seeding. Payment shall include, but not be limited to: seed, storage, handling, delivery, equipment calibration, endomycorrhizal inoculum application, composting, seeding, fiber, fertilizing and harrowing.

1.9.2 Exotic Grass Seeding

Exotic grass seeding shall be measured by the number of acres seeded in accordance with plans and specifications and as directed by the Contracting Officer. Payment for " Exotic Grass Seeding" shall be made at their respective unit price per acre, and shall be in full compensation for all labor, materials, and costs associated with exotic grass seeding. Payment shall include, but not be limited to: seed, storage, handling, delivery, equipment calibration, application seeding, fiber, tackifier, harrowing, and exotic grass establishment.

1.9.3 Soil Test

Soil Testing shall not be measured. Payment for "Soil Testing" shall be at a lump sum price in accordance with plans and specifications and as directed by the Contracting Officer. Payment shall be in full compensation for all labor, materials, and costs associated with, but not limited to: soil sample collection, analyzing, documenting and recommending fertilizer and soil amendment variations.

1.9.4 Discing

Discing shall be measured by the number of acres disced in accordance with plans and specifications and as directed by the Contracting Officer. Payment for "Discing" shall be made at their respective unit price per acre, and shall be in full compensation for all labor, materials, and costs associated with Discing. Payment shall include, but not limited to: discing or tilling, plowing and raking (for rock removal), and ring rolling.

1.9.5 Pesticide Application

Pesticide Application shall be measured by the number of events in accordance with plans and specifications and as directed by the Contracting Officer. Payment for "Pesticide application" shall be made at their respective unit price per event, and shall be in full compensation for all labor, materials, and costs associated with pesticide application. Payment shall include, but not be limited to: pesticide spraying. pesticide application shall apply to Native grass areas only.

1.9.6 Grass Seeding As-builts

Grass seeding as-builts shall not be measured. Payment for "Grass Seeding

As-builts" shall be at a lump sum price in accordance with plans and specifications and as directed by the Contracting Officer. Payment shall be in full compensation for all labor, materials, and costs associated with Grass Seeding As-builts, but not limited to: preparing base mapping, updating data on drawings and submitting required drawings and electronic files to the Government.

1.9.7 Final Establishment Report

Final establishment report shall not be measured. Payment for "Final Establishment Report" shall be at a lump sum price in accordance with plans and specifications and as directed by the Contracting Officer. Payment shall include, but not be limited to: reporting, monthly establishment records, as-maintained drawings,and colored photographic documentation.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Clarification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS-01 and applicable state seed laws. AOSCA / CCIA certifications for seeds are encouraged.

2.1.2 Seed Quality

Weed seed shall not exceed 1 percent by weight of the total mixture. Wet, moldy, insect infested, or otherwise damaged seed shall be rejected and removed from project site. Open containers of seed or improperly tagged containers will be rejected and removed from project site.

2.1.2.1 Sampling

For all seeds or containers, it is the option of the government to take random samples for each species, and require the Contractor to provide analysis of samples at no extra cost to the government.

2.1.3 Seeding Mix

The mixing of seed shall be performed by the Contractor, in the presence of the Contracting Officer, on site as directed by the Contracting Officer.

2.1.4 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer.

2.2 SEED SPECIES AND SEEDING RATES

2.2.1 Native Grass, Dry Mix

Native grass seed species and seeding rates for sites located above 6' NGVD to include upper portions of the planting berm and training dike shall be as follows:

Botanical Name	Native Grass Dry Mixture Common Name	Pounds Pure Live Seed per Acre Drill Seeding	Broadcast Seeding	Hydro-seeding
Elymus glaucus	Blue Wildrye	2	4	4
Leymus triticoides	Creeping Wildrye	2	4	4
Nassella pulchra	Purple Needlegrass	10	17	17
Nassella cernua	Nodding Needlegrass	3	5	5
Poa Secunda	Pine Bluegrass	3	5	5
TOTAL		20	35	35

2.2.2 Native Grass, Wet Mix

Native grass seed species and seeding rates for locations below 6' NGVD to include the floodplain terrace and lower sections of the planting berm and training dike are as follows:

Botanical Name	Native Grass Wet Mixture Common Name	Pounds Pure Live Seed per Acre Drill Seeding	Broadcast Seeding	Hydro-seeding
Hordeum brachyantherum	Meadow Barley	8	15	15
Leymus triticoides	Creeping Wildrye	11	19	19
TOTAL		19	34	34

2.2.3 Exotic Grass

Exotic grass seed species and seeding rates for all locations located land side of the training dike, to include staging areas, haul roads, disposal sites and all other areas disturbed by construction activities shall be as follows:

Botanical Name	Exotic Grass Mixture Common Name	Pounds Pure Live Seed per Acre Drill	Broadcast	Hydro-

	Exotic Grass Mixture	Seeding	Seeding	Seeding
Vulpia myuros	Zorro Fescue	6	10	10
Bromus hordeaceus	Blando Brome	12	20	20
Trifolium Hirtum	Rose Clover	8*	17*	17*
Eschscholzia californica	California Poppy	3	5	5
Lupinus bicolor	Lupine	6	10	10
TOTAL		35	62	62

*Rose clover shall be inoculated. The seeding rate shown reflects the weight of seed without the inoculum.

2.3 PESTICIDES

2.3.1 Contact Pesticide

The contact pesticide shall be selected by the Contractor and approved by the Contracting Officer before application. It shall be a glyphosate based spraying or wicking program.

2.3.2 Broadleaf Pesticide

The broadleaf pesticide shall be selected by the Contractor and must be approved by the Contracting Officer before application. It shall be 2-4D, MCPA, bromozynil, dicamba, Transline w/ Surfactant or approved others.

2.3.3 Pre-emergent Pesticide

The pre-emergent pesticide shall be selected by the Contractor and must be approved by the Contracting Officer before application. It shall be diuron, chlor-sulfuron, pendamenthalin, or approved others

2.4 MULCH

Mulch shall be free from noxious weeds and seeds, mold, and other deleterious materials.

2.4.1 Straw

Straw shall be stalks from, in order of preference: native grasses or rice furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

2.4.2 Wood Cellulose Fiber

Wood cellulose fiber be commercially available and produced from virgin wood fiber. Fiber shall be of such character that fiber will disperse into a uniform slurry when mixed with water. The water content of the fiber before mixing into the slurry shall not exceed 15 percent of the dry weight of the fiber. The moisture content of the fiber shall be clearly marked on the package.

Fiber shall not contain more than 7 percent ash as determined by the Technical Association of the Pulp and Paper Industry (TAPPI) Standard T

413, and shall be nontoxic to plant or animal life.

Fiber shall have a water-holding capacity by weight of not less than 1,200 percent. Water-holding capacity of the fiber shall be marked on the package.

Fiber shall be colored to contrast the area on which the fiber is to be applied. The material used for color shall be nontoxic to plant and animal life and shall not stain concrete or painted surfaces.

2.4.3 Paper Fiber

Paper fiber mulch shall be recycled news print that is shredded for the purpose of mulching seed. It shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color of green to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0. **Paper fiber shall not be used in native grass seeding locations**.

2.5 TACKIFIER

Tackifier shall be a concentrated, biodegradable and organic derivative of the Plantago plant (Plantago insularis). Tackifier shall be non-toxic to plant and animal life, non-corrosive, and non-crystalline and be non-staining to concrete or painted surfaces. Tackifier shall conform to Sections 20-2.11 and Special Provisions Section 10-1.19 of the State of California Department of Transportation Standard Specifications for "Stabilizing Emulsion".

2.6 COMPOST

Compost shall be derived from green material consisting of chipped, shredded, or ground vegetation or clean, processed, recycled wood products or a Class A, exceptional quality biosolids composts, as required by the United States Environmental Protection Agency (EPA), 40 CFR, Part 503c regulations or a combination of green material and biosolids compost. The compost shall be processed or completed to reduce weed seeds, pathogens, and deleterious material, and shall not contain paint, petroleum products, herbicides, fungicides, or other chemical residues that would be harmful to plant or animal life. Other deleterious material, plastic, glass, metal, or rocks shall not exceed 0.1 percent by weight or volume.

A minimum internal temperature of 57°C shall be maintained for at least 15 continuous days during the composting process. The compost shall be thoroughly turned a minimum of 5 times during the composting process and shall go through a minimum 90-day curing period after the 15-day thermophilic compost process has been completed. Compost shall be screened through a maximum 9.5-mm screen.

The moisture content of the compost shall not exceed 35 percent. Compost products with a higher moisture content may be used provided the weight of the compost is increased to equal the compost with a moisture content of 35–40 percent. Moist samples of compost on an as-received basis shall be dried in an oven at a temperature between 105°C and 115°C until a constant

dry weight of the sample is achieved. The percentage of moisture will be determined by dividing the dry weight of the sample by the moist weight of the sample and then multiplying by 100. Compost will be tested for maturity and stability with a Solvita test kit. The compost shall measure a minimum of 6 on the maturity and stability scale.

2.7 Fertilizer

Organic fertilizer shall be BIOSOL 7-2-3 or approved equal and shall conform to the following specifications:

Nitrogen (total)	7%
Nitrogen (water soluble)	0.5%
Available Phosphoric Acid (P2O2)	2%
Soluble Potash (K2O)	3%
PH Level	Approximately 5.4

Heavy metal Contents

Copper	mg/kg/ of DS	11.8
Iron	mg/kg/ of DS	1.865
Nickle	mg/kg/ of DS	5.25
Chromium	mg/kg/ of DS	6.0
Lead	mg/kg/ of DS	2.25
Cadmium	mg/kg/ of DS	0.092
Zinc	mg/kg/ of DS	65.0

2.8 WATER

Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements toxic to plant life.

2.9 ENDOMYCORRHIZAL

Endomycorrhizal (arbuscular) inoculum shall consist of spores, mycelium, and mycorrhizal root fragments in a solid carrier suitable for handling by hydro-seeding or dry seeding equipment. The carrier shall be the material in which the inoculum was originally produced, and may include organic materials, vermiculite, perlite, calcined clay, or other approved materials consistent with mechanical application and with good plant growth. Each endomycorrhizal inoculum shall carry a supplier's guarantee of number of propagules per unit weight or volume of bulk material. If more than one fungal species is claimed by the supplier, the label shall include a guarantee for each species of mycorrhizal fungus claimed.

PART 3 EXECUTION

3.1 Soils Testing

The Contractor shall perform soil tests to determine soil properties for soil texture, organic content, pH, particle size, nutrient level, salinity, chemical analysis and mechanical analysis. If the analysis indicates the soil is detrimental to plant growth, they shall notify the Contracting

Officer, in writing immediately and before the Contractor commences construction or installation of all other requirements. Based upon this analysis, an alternate fertilizer may be recommended by the Contractor if the fertilizer specified is not capable of supporting the plants growth. Sufficient soil samples shall be taken to determine the post excavation soils affect on the proposed plant growth.

3.1.1 Testing Locations

Soils test are only required from designated native grass seeding locations. The Contractor shall perform tests at three representative separate locations within the site boundaries. The test locations shall be representative of site conditions **after excavation** has been completed. One vertical tests shall be performed at each location at six inches below the soil surface. Record, map and submit the analysis with the first year annual reports.

3.2 Discing

The Contractor shall disc all designated **native grass** seeding areas to a depth of six (6) inches. The Contractor shall make as many cross passes as necessary to thoroughly incorporate all herbaceous vegetation and soil amendments into the soil. The Contractor may utilize tilling in-place of discing, if so desired.

3.2.1 Smoothing and Ring Rolling

In designated **native grass** seeding areas, soil conditions such as large clods may require smoothing with a land plane or ring roller prior to seeding, as determined by the Contracting Officer.

3.3 SEEDING

The Contractor shall seed all **native grass** locations with slopes less than 3:1 using the drill method. Drill seeded areas shall include the floodplain terrace and planting berm. All native grass locations with slopes greater than 3:1 shall be seeded using the broadcast or hydroseed method. Broadcast or hydroseed native grass areas shall include the training dike slopes. It shall be the Contractors option to utilize drill, broadcast or hydroseed methods for all locations receiving exotic seed mix. Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rain, traffic or other cause, shall be reworked to restore the ground for optimum seedbed conditions.

3.3.1 Broadcast Seeding

Seed shall be uniformly broadcast using mechanical broadcast seeders at the rate as specified under paragraph SEED SPECIES AND SEEDING RATES. Half of seed shall be broadcast in one direction, and the remainder at right angles to the first direction. Seed shall be covered to an average depth of ¼ inch by harrowing with steel mat or chain drag, cultipacker, or other approved device. For slopes steeper than 2H:1V or inaccessible areas, hand broadcasting may be required and harrow or hand raking where practical.

3.3.1.1 Native Grasses

The Contractor shall employ the following steps when broadcast seeding native grasses:

A. Broadcast endomycorrhizal inoculum (at rate specified)
B. Spread organic compost at 3000 lbs per acre
C. Disc and incorporate compost and endomycorrhizal inoculum into soil(endomycorrhizal inoculum shall be incorporated into soil within 3 hours of broadcasting)
D. Seed Mix, as specified and at rate specified
E. Broadcast Fertilizer (Biosol or approved equal), at a rate of ~~10000~~***1000*** lbs per acre
F. Harrow seed and fertilizer

3.3.2 Drill Seeding

Seed shall be uniformly drilled to a maximum ½ inch depth and at the rate specified under paragraph SEED SPECIES AND SEEDING RATES, using equipment having drills a maximum 7 inches apart. Row markers shall be used with the drill seeder. The drilling equipment shall be maintained, at minimum, with half full seed boxes during the seeding operations. Furrows created from drill seed operations shall run perpendicular to slopes, to minimize erosion.

3.3.2.1 Native Grasses

The Contractor shall employ the following steps when Drill seeding native grasses:

A. Broadcast organic compost at 3000 lbs per acre
B. Disc and incorporate compost into soil
C. Drill Seed Mix and endomycorrhizal inoculum as specified and at rate specified
D. Broadcast Fertilizer (Biosol or approved equal), at a rate of ~~10000~~***1000*** lbs per acre

3.3.3 Hydroseeding

Seed species shall be mixed to ensure a seeding rate as specified under paragraph SEED SPECIES AND SEEDING RATES. When utilized, wood cellulose fiber shall be added to the mixture after the water and other mixture components have been thoroughly mixed to produce a homogeneous slurry. The slurry shall have the proper consistency to adhere to the earth slopes without lumping or running. The time period for the seed to be held in the slurry shall be a maximum 24 hours. Slurry shall be uniformly applied under pressure over the entire designated area. The hydroseeded area shall not be rolled.

3.3.3.1 Native Grasses

The Contractor shall employ the following two-step hyrdoseeding process:

Step 1: Apply the first step as a complete mixture as indicated below

A. Wood Cellulose Fiber, at a rate of 1000 lbs per acre
B. Organic Compost, at a rate of 1,500 lbs per acre
C. Seed Mix, as specified and at rate specified
D. Fertilizer (Biosol or approved equal), at a rate of ~~10000~~***1000*** lbs per acre
E. Endomycorrhizal Inoculum, at a rate of 3,600,000 propagules per acre

Step 2: Apply the second step as a complete mixture as indicated below:

A. Wood Cellulose Fiber, at a rate of 500 lbs per acre
B. Tackifier, at a rate of 100 lbs per acre

3.3.3.2 Exotic Grasses

The Contractor shall employ the following one-step hyrdoseeding process:s:

Step 1: Apply the first step as a complete mixture as indicated below.

A. Seed Mix, as specified and at rate specified
B. Fertilizer (16-20-0), at a rate of 300 lbs per acre
C. Hydromulch fiber, at a rate of 1,500 per acre
D. Tackifier, at a rate of 80lbs per acre

3.4 APPLYING ENDOMYCORRHIZAL INOCULUM

The Contractor shall apply Endomycorrhizal inoculum to all locations receiving **native grass** seeding as per requirements for method used.

3.4.1 Application with Broadcast Seeding

The Contractor shall incorporate Endomycorrhizal Inoculum by broadcasting prior to seeding operations. Inoculum shall be applied at the rate of 3,600,000 propagules per acre based on the supplier's certification or an analysis returned by an independent laboratory. The broadcast device shall not grind or unduly compress the carrier granules or fungal spores. The inoculum shall be incorporated into the soil within three hours of broadcasting by discing the soil and shall result in incorporation of 80% of the inoculum granules to a depth of 1 to 6 inches.

3.4.2 Application with Drill Seeding

The Contractor shall incorporate Endomycorrhizal Inoculum as part of seed drilling operations. Inoculum shall be applied at the rate of 3,600,000 propagules per acre (8,900,000 per hectare) based on the supplier's certification or an analysis returned by an independent laboratory. The inoculum shall be added to the seed bin of the drill seeder and mixed into the seeds and such materials as wheat bran. Endomycorrhizal inoculum must not be placed in any equipment that has heated up in the sun to a temperature highter than 90 degrees F (32 degrees C). If the seed drill is equipped with a separate bin for mycorrhizal inoculum, the inoculum shall be dispensed from the separate bin in accordance with the operating procedures specified for the equipment.3.4.3 Application with Hydroseedingg

Endomycorrhizal inoculum shall be applied at the rate of 3,600,000 propagules per acre (8,900,000 per hectare) based on the supplier's certification or an analysis returned by an independent laboratory before or in the same application as the seeds. Inoculum must be applied within one hour of addition to the mixing tank. In no case shall Endomycorrhizal inoculum be applied after the seeds. Inoculum must be applied within one hour of addition to the mixing tank. A second pass with mulch at the rate of is required to cover exposed seed and inoculum. If temperatures will exceed 90 degrees F (32 degrees C), remaining erosion control applications must be applied within three ours of the application of the inoculum.

3.5 MULCH AND TACKIFIER

All seeded areas, as identified in the Storm Water Pollution Protection Plan, shall be mulched and tackified after seeding operations.

3.5.1 Applying Straw

Straw mulch shall be applied to designated seeded areas upon completion and approval of the seeding application by the Contracting Officer. Mulch shall be spread by hand, blower-type mulch spreader or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of a steep slope and continued uniformly until the area is covered. The mulch shall be applied loose and not be bunched. All designated areas shall be mulched within 48 hours of seeding. Rate of mulch application shall be 2 tons per acre of native grass straw or 1-1/2 tons per acre for rice straw.

3.5.2 Applying Tackifier

All straw mulch areas shall be anchored with a commercially available dyed organic tackifier.

3.5.3 Crimping or Punching

As a substitute for tackifying, all straw areas shall be mechanically crimped or punched into soil.

3.5.4 Applying Fiber

Wood cellulose fiber (native grasses), paper fiber (option for exotic grasses), or recycled paper(option for exotic grasses) shall be applied as part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.6 MAINTENANCE DURING SEEDING PERIOD

Maintenance shall begin immediately after seeding is completed and shall continue throughout the Seeding Period. Maintenance of the seeded areas shall include the following until Seeding Acceptance is given: regular observations of the site, spraying for weed control, and repair of damaged areas.

3.6.1 Weed Control After Seeding

If weeds germinate after seeding installation and prior to seeding acceptance the Contractor shall provide pesticide spraying over designated **native grass** seeded area(s) for broadleaf and annual grasses. This weeding effort shall be 1 of the 3 projected Pesticide Application for Seeding events as stated in the pricing schedule, and shall be separate from weeding efforts conducted during the native grass establishment period. At no time shall pesticide application affect the health and vigor of native grasses. Application rate shall be as per manufacturer's recommendations for targeted species. Weeding operations

3.6.2 Repair

All Contractor damaged areas shall be repaired by the Contractor to their original condition within 5 working days.

3.7 CLEANUP

Excess and waste material shall be removed from the seeded and staging areas and shall be disposed of off the site.

3.8 NATIVE GRASS ESTABLISHMENT

The following requirements shall apply to designated native grass seeding areas only.

3.8.1 Weed Control

Site conditions shall govern whether weed control measures shall occur. The Contractor is required to perform the following projected quantity tasks,(2 of the 3 Pesticide Application for Seeding events as stated in the pricing schedule), and shall be exercised at the discretion of the Contracting Officer. Application rate shall be as per manufacturer's recommendations for targeted species.

3.8.1.1 Pesticide application

A.Annual Grass Weeds: If and when temperature and soil moisture conditions cause annual grass germination prior to the germination of native grasses then the contractor shall apply pesticide to said annual grasses. Annual grass shall be clearly identified and no signs of native grass germination shall be present prior to pesticide application. Application of pesticide to annual grasses shall occur within 5 working days of detection of annual grass germination.

B. Broadleaf Weeds: If and when Broadleaf weeds are detected on site the contractor shall apply selective pesticide to said broadleaf weeds. Pesticide application for broadleaf weeds shall occur a minimum of 6-8 weeks after seeding installation acceptance.

3.9 EXOTIC GRASS ESTABLISHMENT

3.9.1 Establishment Duration

The Contractor shall be required to provide maintenance for exotic species seeded areas for a period of 60 continuous days starting from Seeding Acceptance.

3.9.2 Establishment Tasks

The Contractor shall perform the following tasks:

3.9.3 Repair

All locations damaged by contractor operations or natural caused shall be restored to their condition at the time of Seed Installation Acceptance.

3.10 FINAL ESTABLISHMENT REPORT

The Contractor shall provide project information which documents past and current conditions of the **native grass seeding areas only** and prepare and submit to the Contracting Officer as indicated below:

3.10.1 As-Maintained Drawings

The Contractor shall prepare as-maintained drawings of the work completed herein. The as-maintained drawings shall be based upon the as-built drawings. These drawings shall be updated to include all current conditions, impacts and results of the seeding.

3.10.2 Monthly Establishment Records

The Contractor shall prepare and keep current a record of monthly maintenance performed on the project. The report shall identify at a minimum, project name, planting zones, date and establishment period. It shall identify and discuss weed control performed, irrigation activity and maintenance, plant health, vandalism, site feature conditions, general observations, total precipitation for the month, personnel onsite, and any other pertinent information describing site conditions and activities performed during the month. See Form A for example of outline attached at the end of this section.

3.10.3 Final Report

The Contractor shall submit a final report to the Government. Each report shall be submitted in 8.5"x11" report format, as well as a current electronic copy in MS Word. When drawings are submitted, folded 11"x17" sheets are acceptable.

The yearly reports shall document current plant and site condition, as well as, conditions during the past year. The Contractor shall survey grass survival and document as a percentage in the report.

The yearly reports shall be bond with a title sheet and table of contents and include copies of the following: As-Maintained Drawings (reduced to 8.5"x11" or 11"x17" format), Monthly Establishment Records, Survival

results, soil test results and a color photographic documentation of the site which is representative of plant and site conditions, as well as, a discussion of the maintenance activities performed.

PART 4

ATTACHMENTS

ATTACHMENT 4.1

(Example)
FORM A
Monthly Establishment Record
For Revegetation Projects

Project:
Planting Zone:
Date:
Establishment Period:

OUTLINE
Briefly discuss the events listed below

1. Weed Control: (discuss when, where, and what was done)
   Mowing, Pesticide Application, Discing, Burning, etc…

2. Plant Health:

3. Vandalism:

4. Site Feature Condition:
   Access Road, Fences, Signs, etc…

5. Site Condition:

6. General Observations:

7. Precipitation (total for month):

8. Personnel:

9.Other:

-- End of Section --